THE DIAGNOSIS OF POTENTIAL NEUROSIS

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THAT psychologists are alive to the need of the elimination of the mentally unfit from those recruiting for military service is shown by the recent plan of the American Psychological Association to examine all the men by means of a comprehensive set of mental tests before they are accepted. If the outline is adopted and psychologists are set to work the next question will be the selection of some series of tests of proper diagnostic value. In all probability intelligence tests will occupy a large part of the testing program, but there is one large group of individuals who should be eliminated that neither intelligence tests nor any physical examination would detect; namely, those who in a short time break down under the special strain that they are forced to undergo in active service. The number of such cases that have occurred make it exceedingly worth while to endeavor to detect such individuals before they are sent to the front. If discovered they could be given less strenuous work, but none the less important, they could be saved from mental disruption and the loss to the government would be obviated.

It does not take a psychologist to know that resistance to mental strain is a variable quantity as are all other physiological and psychological facts. Some individuals in the midst of a great amount of excitement can remain perfectly composed, seemingly impervious to the influences at work about them. Others are roused to react with greater vigor, but experience no apparent harm from their increased activity. Others are easily nettled by the slightest emotional excitement and recover but slowly and with difficulty. While we have no information on the characteristics of the individuals who are the first to succumb mentally, it at least seems plausible that those who can adjust themselves with least ease to additional mental strain would fall into this group. The selection of these individuals might be made by a test which would subject them to unusual mental exertion or shock; those being regarded as potentially neurotic who are unable to meet the situation by proper adaptations. This at least seems more hopeful than any classifica-

tion made on the basis of intelligence tests. Mental stability is by no means correlated with intelligence.

We have shown in our work on sound distraction[1] that the most significant phenomenon that is evident in experiments designed to find the effect of environmental conditions upon psychophysical activity is the adaptation of the subject to the change in experimental conditions. If one shows no observable difference in his response to two situations, it is evidence that adaptation is perfect, not that the two situations are identical, of equal complexity or equally desirable. If one manifests a difference in his response to two different situations, this difference is not a measure of the difference between the situations, nor a measure of how much they differ in their effect upon the subject; it is simply an indication of how far the change between the two situations is beyond his power of adaptation. The writer believes that this fact opens a promising method of showing individual differences in ability to meet exceptional situations, and is hopeful that some simple test along the line to be suggested later may be found to be useful in the present crisis.

As a suggestive illustration of our point we will show the different ways in which the subjects responded to noise distraction. The experiment consisted of giving an individual the task of responding to visually presented material by translating it through a series of codes and then reacting on the one of ten keys which the exposure and translation designated. Each response caused a new exposure so that the subject could work just as rapidly as he chose. After he had worked at this task for a period of twenty to thirty minutes loud noises were introduced, continued for some time and then stopped, the sitting ending with a period of about ten minutes of work in quiet. In another experiment the subject was given the task of memorizing paired-associates under both quiet and noisy conditions.[2] In both experiments records were kept of the breathing of the subjects and of the amount of pressure they used in reacting upon the keys. A brief comparison of the various ways in which the individuals responded in the memory experiment is given in the original article and will not be treated further here. We will, however, make a comparison of the individuals in the discrimination reaction experiment.

In this experiment there were twenty-one subjects whose records are available for our purpose. We have made a brief

[1] *Archives of Psych.*, 1916, No. 35.

[2] *Am. Jour. of Psych.*, 1917, *28*, 191–208.

of their records and present them in the table; the letters in the first column designating the subjects as given in the original monograph. The first column of figures gives the percentage of increase or decrease in the time records of the subjects when the noises were first introduced; the second gives the percentage of increase or decrease of the end of the noise period as compared with the beginning; the third gives a comparison of the time records after the noises stop with those in the latter end of the noise period. The next three columns give the percentages of increase or decrease in the keep pressure records when the same periods are compared. A plus percentage indi-

TABLE

SHOWING THE PERCENTAGES OF INCREASE OR DECREASE IN TIME, KEY-PRESSURE AND RATIO OF THE BREATHING EXPIRATION TO THE INSPIRATION TIME DURING THE COURSE OF AN EXPERIMENTAL SITTING IN WHICH NOISES WERE INTRODUCED AS A DISTRACTION. A, first part of noise period compared with preceding quiet; B, last part of noise period compared with first part of noise period; C, quiet succeeding noise compared with last part of noise period.

Subjects	Time			Key-pressure			Breathing Ratio		
	A	B	C	A	B	C	A	B	C
O	— 2.5	5.2	— 5.0	29.3	—16.4	—21.0	7.28	3.7	— 9.5
P	33.0	—20.6	— 5.8	93.8	13.9	—56.1	19.2	—24.2	9.7
Q	1[illegible].2	—27.0	3.7	161.0	—21.6	—23.4	—11.4	54.8	—30.6
R	10.8	— 8.5	2.1	19.8	—10.0	—20.8	—37.1	25.9	15.9
S	10.4	— 7.9	3.3	18.3	8.0	—37.2	—19.7	18.2	— 4.8
T	—10.5	— 5.8	15.1	146.8	4.5	—32.4	—16.7	153.5	—52.9
Bl	0	—12.9	— 7.1	8.0	— 7.4	—12.0	48.4	—30.1	—10.7
Sp	2.1	—10.4	1.2	21.8	—12.3	— 8.7	22.2	2.5	— 1.5
Sa	6.8	— 3.8	1.5	9.7	—43.6	—17.2	3.4	4.4	—36.4
Br	9.9	—18.4	— 8.4	27.0	— 7.1	—14.0	— 7.8	28.5	—24.2
Bo	— 9.6	— 4.5	1.6	13.4	— 2.0	3.0	5.7	— 2.0	— 6.5
Ch	— 9.6	0	0.7	14.9	26.5	—22.9	20.6	14.2	—10.5
Cr	— 3.6	1.0	— 1.4	—22.8	—19.2	— 4.3	33.0	—22.6	— 6.7
Re	18.5	— 9.4	— 2.9	7.1	—18.1	—15.1	14.7	— 2.5	—15.7
Pf	25.8	—26.8	6.4	19.5	—17.6	— 4.0	8.8	— 1.0	19.8
Me	1.5	—10.7	2.6	0.6	— 3.7	2.5	1.8	2.4	—15.2
Ca	0.8	— 1.0	—17.2	32.5	— 5.7	—34.0	— 0.5	22.4	— 7.9
De	3.5	2.9	— 4.3	26.7	— 2.6	—16.2	31.7	4.1	—20.4
Hi	—10.9	1.5	— 1.0	9.0	—14.5	—10.3	32 1	33.3	—20.5
Kr	—12.8	— 2.9	9.6	37.7	—16.2	—34.3	—10.3	48.7	—24.0
Ta	9.3	—18.3	— 1.7	3.1	37.7	—14.2	21.4	120.3	—47.5

cates that the keys were pressed with greater vigor. The last three columns in the same way give comparisons of the breathing ratios. The breathing ratios were found by dividing the expiration time by the inspiration time; and indicate, we believe, the extent to which the subjects articulated as they worked.

Of the twenty-one individuals thirteen showed a loss in efficiency when the noises were first introduced, seven showed a gain and one no difference. Of the seven who manifested a gain in efficiency, six showed that they were in a state of greater muscular tension because they pressed the keys with greater force when the noises were introduced, and five of the seven showed by their breathing that they articulated to a greater extent in the noisy period. Of the thirteen who showed a loss in efficiency all showed an increase in muscular tension, eight indicated greater articulation in the first part of the noisy period and ten in the latter part of the noisy period as compared with the first part. The second column of the table shows that only four do less in the latter part of the noisy period than in the first part, three of these being of the group who did better when the noises first came than they did in the quiet. Of these three (O, Cr, and Hi) O and Hi both pressed the keys harder and gave a higher breathing ratio. Cr pressed the keys progressively more lightly, but shows a strong initial articulation adaptation. He evidently was not much excited by the situation, he did not become tense, but simply chose the means of adaptation that was of service in the situation and successfully met the conditions at hand. Sixteen improve in efficiency in the latter part of the noise period, and of these only four do not show less muscular tension at the same time, while eleven show an increased breathing ratio and five a decreased. The third columns of each group of records show that most individuals relax after the noises cease. Eleven individuals show a loss in efficiency, nineteen show less muscular tension, and eighteen a smaller breathing ratio, *i. e.*, less articulation. It is possible that inability to relax after a strain would serve as a valuable diagnostic sign. It is perhaps no bad sign for one to be aroused by a situation, but if he can not adjust himself to the return of normal conditions he is wasting valuable energy and may be more likely to break down under unusual situations.

We have cited these cases to show the great variety of responses that are manifested by university students. It is likely that none of these were of the type who could not withstand considerable mental strain; academic training is in itself a good eliminating agent. In a random group of individuals it is certain that we should get even greater variation in response.

It may be thought that intelligence tests would serve the purpose we suggest since they aim to test an individual's reaction to a more or less novel situation; and, as a novel situation would involve additional effort on the part of the subject tested,

if he could not exert this effort he would of course fail in the test. This is true in a measure, but in intelligence tests the emphasis is placed upon adjustment to the novel and not upon the cost of the adjustment to the individual. An intelligence test might be of value as a task to be given the subject if a measurement could be made of the amount of strain the solution caused him and whether he recovered from the strain in a reasonable length of time. A measurement of the stress under which one is working is a very difficult and uncertain affair, even in an elaborately controlled experiment, and would certainly not be practicable in the testing of recruits. A more hopeful method would seem to be along the line of making the difference between two situations so vastly different in complexity that it would require a great effort in order to adapt oneself quickly to the one after having worked in the other. This would simply be an extreme of the situation offered in our distraction experiments. An individual who might react to a moderate change in the experimental setting with little or no loss in efficiency in the work at hand might, if the change was severe enough, show a great loss or even a breakdown. The selection of a task which would give an adequate record of efficiency and the creation of two experimental situations differing greatly in their effect upon the task in hand would be the problems to be solved. They do not seem to be beyond solution by any means.

The accounts of the initiatory rites of savages and of earlier civilizations abound in methods of testing the powers of physiological endurance of the young men. They recognized that a body resistant to fatigue and strain was essential to their life of hunting and warfare. Those who could not meet the tests were not allowed to play the part of a man, but were given easier tasks. To-day physiological and medical examinations are made in order to select those with able bodies, but this war has demonstrated that a large part of the strain placed upon the soldier is mental. War is no longer a match of physiological prowess, it is essentially a match of brain power. This makes it essential that we have a means of selecting the mentally hardy to take the leading parts in the conflict. Intelligence tests will probably play the rôle in the mental examination that the physiological test does in the body examination. It is, however, recognized that a medical examination is just as essential or more so than a physiological. If a man is infected with some disease he is eliminated; if he is incipiently or potentially a neurotic he should be eliminated with even greater care. At

present psychiatrists have no means of judging who can endure mental strain with impunity, and it seems an opportune time now to discover the means of making such a diagnosis. If no test can be used at present with enough confidence to make a selection of the recruits, tests that look promising could be made on all those examined and the records of those who succumb compared with the records of those who survive the strain. This would give data that would be valuable not only in war time, but also for use in vocational guidance in times of peace. In the event that such a procedure is adopted we trust that tests whose aim will be to eliminate those least able to adapt themselves to situations of unusual mental strain will receive the attention that they deserve in the testing program.